

A Brief Proposal
To Establish an Endowed Chair at the University of Alaska Fairbanks
in Renewable Energy and Housing
Endowment to be established within the
University of Alaska Foundation

This proposal is to establish an endowed chair, one focused on Renewable Energy Development and its engineering aspects, and including what I do now through Cooperative Extension in collaboration with the Engineering Department: Energy and Housing Development with a physics background, in order to adequately prepare people for achieving the best possible market housing, quality housing technology and housing satisfaction and durability in our State.

It is an open question as to whom or which organizations might ultimately fund such an endowed chair. The endowed chair might already exist if the State of Alaska had a positive and supportive attitude toward higher education, toward energy development, and energy futures that afforded the University the opportunity to pursue those long-range goals. Alaska has been remiss in this area. But in a political context we have not fully appreciated the fact that, of all the state affiliated and state supported enterprises and activities, the University is where the best and most fundamental, long-term vision should reside. It should be the University which is the protector and promulgator of the culture, the infrastructure, the science, the future aspirations, in fact the suggester of alternative futures, if I might be that bold, for Alaska.

This is particularly true for Alaska, which obviously recognizes from its political experience, first, that fossil fuel is finite. Our resources of fossil fuel are already declining and will eventually run out. The option that the state has which is unique in the world, is having put aside the Permanent Fund. This tacitly gives recognition to the fact that other renewable resources (in this specific case money) are at least a recognizable alternative for keeping the state operative. But let me focus here on a renewable energy future and sustainability as a long-term vision. Energy is fundamental. Energy is what we turn into dollars. Energy is what we use to facilitate human effort to produce capital goods, such as housing, automobiles, transportation, and services. It is this primary role that I would like to focus upon because it has been the primary vision of my life as a professor at UAF. It is a torch which I would like to light, hold out, and pass to a new generation in keeping that vision alive, keeping that long term renewable future prospect available, at an intellectual level and on a practical level in Alaska. Much of my adult life has been devoted to determining, transferring, and developing the technology of housing and energy. I am a physicist by training and these educational options are best understood in an engineering and physics context.

To state my case forthrightly such a professorial chair as I am promoting here should be housed as follows. The Energy and Housing Specialist, would be a

position similar to mine, an endowed chair operating primarily through the Alaska Cooperative Extension at the University of Alaska Fairbanks.

Several important Alaskan aspects bear on this. First, it's important to recognize that most of our natural resources, most of our economic base is renewable. It is inevitable, I believe, that our primary mode of energy will also be renewable. We have tremendous hydroelectric potential for further electrification. We have enormous world class, wind potential, particularly in coastal, remote areas, the Aleutians, the Alaska Peninsula, Northwestern and Western Coastal Alaska, and the outer coast of Southeast Alaska. There is also a great deal of wind in mountain passes. The solar potential, particularly for photovoltaic applications, is statewide. Obviously it is seasonally very skewed toward the summer months. But this is not necessarily a disadvantage. A great deal of synergy can be demonstrated and I elaborate this as part of the support for this proposal, that the clear winter peak for wind corresponds very nicely and complements the summer peak for photovoltaic solar energy systems. Utilizing a storage mechanism such as electrolytically produced hydrogen; these could be used very nicely conjoined with each other seasonally to produce a smooth, reliable, consistent energy base for operation at many scales in Alaska. Wood is always going to be resource of at least secondary importance. It's renewable if harvested on a relatively low level and it has been used for all recorded history as a major tool in human development in Alaska.

Another important aspect of renewable energy is the difficulty of using fossil fuel resources at the scale and level that they are utilized and needed in Rural Alaska now. No one needs to examine this problem very deeply to uncover the problematic situation with energy costs, particularly electricity, in Rural Alaska. This is an ongoing, continuous, and unsolved problem. Power cost equalization has been in place for nearly 20 years and all it has done is subsidize a bad situation. It has not provided for an alternative that could supplant the expensive utilization of electric energy at a very dispersed and low level, which minimizes any economies of scale in its production. Because of the nature of our population base and density and the geographic disparities of climate, a focus on renewable energy development is a crucial element of a long-term future for rural Alaska. Nothing in my opinion could be more fruitful for the University to maintain than a continuing intellectual presence in the development and research of adequate, appropriately applied alternative energy resources.

All of this speaks well to a professorial endowed chair, to apply and integrate these elements into housing technology. Much of what is necessary to bring renewable energy to a level of acceptance given our present fossil fuel use, is a very keen matching of the design of energy utilization and appliances in housing and the performance of that housing, the materials used in that housing, with the energy available, on-site from renewable energy sources. All of these issues are implicit now in my role in Cooperative Extension. What I am asking is the establishment of a chair, which is dedicated to keeping these functions alive in the University. I submit they are valuable and necessary to the wellbeing, safety, and general health of Alaskans. The chair will also ensure the university a role in a technologically evolving society, which will always need electrical energy, but

can use that electrical energy in a way, which is environmentally benign and sustainable for a very, very long time, perhaps forever.

With these aspects as a preface, I propose an endowment fund of \$2,000,000 for the chair with the following mandate. Specific intellectual pursuits in the purview of this chair include renewable energy assessment, development, and technological research housed perhaps in the Engineering Department at the University and working closely with other faculty. This I will name (for reference) the Alaska chair in Energy and Housing, established with a \$2,000,000 endowment to pay an adequate faculty salary in perpetuity with endowment earnings. This endowment amount would accommodate ~\$100,000 salary a year at a five percent earning rate for the endowment principle. Anything more than that which is needed for salary could be used to build inflation proofing into the endowment and to further enhance the appeal of filling the chair by offering more funds for salary and benefits, possibly including research support.

This chair is also important because, ironically, the State is going (in the 1990's at least) in the opposite direction regarding the University. The University is being forced to divest itself of its highest paid, most highly experienced faculty, as they are encouraged to retire. If I were to retire from my existing position, it is likely that the University would end my position as I've developed it. This is why I feel both a personal and professional interest in seeing that this endowed chair is established by whatever means, and from whatever funding is deemed appropriate and available. If we do not do this, everything we have learned will be lost to research potential and not be kept alive regarding modernization and development of ideas. And if we do not encourage more information and development of technologies relevant to our situation and appropriate to our climate and needs, we will never be able to make an adequate transition to a renewable energy resource base and economy. I see the distinction here as nothing less than one of either doing nothing, not establishing these endowments, thereby causing Alaska to slide into a position of a backwater, fumbling in transition, trying to scrape by with declining oil revenues without any hope for an emergent renewable, sustainable, civilized culture.

The alternative of doing some preparation, modest though it would be with only one chair, would be a legacy of educated students with the prospect of developing skills for this transition and anticipation of it. Few things could be more imperative or important to Alaska's future than ensuring this type of transition. It is true regardless of who funds it. The arguments that I make here on the importance and inevitability of the renewable energy transition, make the case, I believe, as a very worthy enterprise.

This proposal is not restricted as to the donor. It is possible that an endowment could come from the Alaska Science and Technology Foundation. No one has suggested this but other money from the Foundation has funded other, I feel less crucial renewable energy and renewable resource science and research at the University. It is a possibility and it certainly seems appropriate.

I also am going to present this idea to the University Regents and try and enlist their support. Many universities have established Regents Professorships, endowed chairs in various interest areas, often funded by major donors and philanthropists to those universities. Perhaps there are philanthropists and donors who would see fit and have the vision and inclination to fund these. I ask the Regents for that insight and input. I welcome any alternatives and would be more than willing to build a deeper case than I have tried to make in this first proposal, to further elucidate why a professorial chair is so crucial and so imperative.

An additional concern is that so much of the University's mission and contribution is being eroded by lack of investment. It is a duty of the Regents to see that this is reversed. I hope the latest appointed Regents (in 1999) will undertake this role with courage and insight and proceed to get more endowed chairs for our University to ensure its future, and to somewhat insulate it from the destructive capability of a Legislature which simply wants to cut its budget regardless of the impacts and long term devastating effects that such fiscal policy entails.

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